

We claim:

1. A chimeric prostate-homing pro-apoptotic peptide, comprising a prostate-homing peptide linked to an antimicrobial peptide,

5 said chimeric peptide selectively internalized by prostate tissue and exhibiting high toxicity thereto, and

10 said antimicrobial peptide having low mammalian cell toxicity when not linked to said prostate-homing peptide.

2. The chimeric peptide of claim 1, wherein said prostate-homing peptide comprises the sequence SMSIARL (SEQ ID NO: 207), or a functionally equivalent sequence.

3. The chimeric peptide of claim 1, wherein said 15 antimicrobial peptide has an amphipathic  $\alpha$ -helical structure.

4. The chimeric peptide of claim 1, wherein said antimicrobial peptide comprises a sequence selected from 20 the group consisting of:

(KLAKLAK)<sub>2</sub> (SEQ ID NO: 200);

(KLAKKLA)<sub>2</sub> (SEQ ID NO: 201);

(KAAKKAA)<sub>2</sub> (SEQ ID NO: 202); and

(KLGKKLG)<sub>3</sub> (SEQ ID NO: 203).

25 5. The chimeric peptide of claim 1, wherein said antimicrobial peptide comprises the sequence <sub>D</sub>(KLAKLAK)<sub>2</sub>.

6. The chimeric peptide of claim 5, comprising the sequence SMSIARL-GG-<sub>D</sub>(KLAKLAK)<sub>2</sub>.

7. The chimeric peptide of claim 6, consisting of the sequence SMSIARL-GG-<sub>D</sub>(KLAKLAK)<sub>2</sub>.

8. A method of directing an antimicrobial peptide *in vivo* to a prostate cancer, comprising administering 5 the chimeric peptide of claim 1.

9. The method of claim 8, wherein said prostate-homing peptide comprises the sequence SMSIARL (SEQ ID NO: 207), or a functionally equivalent sequence.

10. The method of claim 8, wherein said antimicrobial peptide comprises the sequence <sub>D</sub>(KLAKLAK)<sub>2</sub>.

11. The method of claim 10, wherein said chimeric peptide comprises the sequence SMSIARL-GG-<sub>D</sub>(KLAKLAK)<sub>2</sub>.

12. The method of claim 11, wherein said chimeric peptide is SMSIARL-GG-<sub>D</sub>(KLAKLAK)<sub>2</sub>.

15 13. A method of inducing selective toxicity *in vivo* in a prostate cancer, comprising administering the chimeric peptide of claim 1 to a subject having prostate cancer.

20 14. The method of claim 13, wherein said prostate-homing peptide comprises the sequence SMSIARL (SEQ ID NO: 207), or a functionally equivalent sequence.

15. The method of claim 13, wherein said antimicrobial peptide comprises the sequence <sub>D</sub>(KLAKLAK)<sub>2</sub>.

16. The method of claim 15, wherein said chimeric peptide comprises the sequence SMSIARL-GG-<sub>D</sub>(KLAKLAK)<sub>2</sub>.

17. The method of claim 16, wherein said chimeric peptide is SMSIARL-GG-<sub>D</sub>(KLAKLAK)<sub>2</sub>.

5 18. A method of treating a patient having a prostate cancer, comprising administering the chimeric peptide of claim 1 to said patient, whereby said chimeric peptide is selectively toxic to said tumor.

10 19. The method of claim 18, wherein said prostate-homing peptide comprises the sequence SMSIARL (SEQ ID NO: 207), or a functionally equivalent sequence.

20. The method of claim 18, wherein said antimicrobial peptide comprises the sequence <sub>D</sub>(KLAKLAK)<sub>2</sub>.

15 21. The method of claim 20, wherein said chimeric peptide comprises the sequence SMSIARL-GG-<sub>D</sub>(KLAKLAK)<sub>2</sub>.

22. The method of claim 21, wherein said chimeric peptide is SMSIARL-GG-<sub>D</sub>(KLAKLAK)<sub>2</sub>.